

IN THE CLAIMS

1. (currently amended) A method of making a plant artificial chromosome, comprising:

(a) preparing recombinant protoplasts of a first plant species containing an exogenous nucleic acid, wherein said exogenous nucleic acid comprises at least one restriction site, and at least one recombination site recognized by a site specific recombinase;

(b) irradiating the protoplasts of (a), thus producing chromosome fragments of chromosomes contained in the recombinant protoplasts;

(c) fusing the recombinant protoplasts of (b) with protoplasts of a second plant species to produce fused protoplasts, wherein the first and second plant species may be the same or different; and

(d) identifying fused protoplasts of (c) or cells derived from the fused protoplasts of (c) that contain chromosome fragments containing the exogenous nucleic acid, and that exhibit normal plant chromosomal activities.

2. (previously presented) The method of claim 1 wherein (b) comprises irradiating the protoplasts with gamma radiation.

3. - 4. (cancelled)

5. (original) The method of claim 1 wherein said identifying of (d) comprises pulsed field gel electrophoresis.

6. (original) The method of claim 1 wherein said second plant species is the same as said first plant species.

7. (original) The method of claim 1 wherein said second plant species is a member of the same family as said first plant species.

8. (original) The method of claim 1 wherein said first plant species is a monocot.

9. (original) The method of claim 1 wherein said first plant species is a dicot.

10. (cancelled)

11. (original) The method of claim 1 further comprising (f) regenerating a whole plant from the fused protoplasts or plant cells identified in claim 1(d).

12. -13. (cancelled)

14. (original) The method of claim 1 wherein the exogenous nucleic acid comprises at least one coding region.

15. (previously presented) The method of claim 1 wherein the exogenous nucleic acid comprises at least one sequence comprising a yeast chromosomal element.

16. (previously presented) The method of claim 1 wherein the exogenous nucleic acid comprises a yeast artificial chromosome.

17. (cancelled)

18. (currently amended) A method of preparing a transgenic plant comprising:

(a) preparing recombinant protoplasts of a first plant species containing an exogenous nucleic acid, wherein said exogenous nucleic acid comprises at least one restriction site, and at least one recombination site recognized by a site specific recombinase;

(b) irradiating the protoplasts of (a), thus producing chromosome fragments of chromosomes contained in the recombinant protoplasts;

(c) fusing the recombinant protoplasts of (b) with protoplasts of a second plant species to produce fused protoplasts, wherein the first and second plant species may be the same or different;

(d) identifying fused protoplasts of (c) or cells derived from the fused protoplasts of (c) that contain

chromosome fragments that exhibit normal plant chromosomal activities; and

(e) regenerating a whole plant from the protoplasts or cells identified in (d) that contain said chromosome fragments containing the exogenous nucleic acid, and that exhibit normal plant chromosomal activities.

19. - 35. (cancelled)

36. (previously presented) The method of claim 15, wherein the yeast chromosomal element comprises a first centromeric sequence functional in a yeast cell.

37. (previously presented) The method of claim 36, wherein the chromosome fragments further comprise a second centromeric sequence functional in a plant cell.

38. (currently amended) A method of making a plant artificial chromosome, comprising:

(a) preparing recombinant protoplasts of a first plant species containing an exogenous nucleic acid, wherein said exogenous nucleic acid comprises a selectable marker gene and at least one restriction site, and at least one recombination site recognized by a site specific recombinase;

(b) producing chromosome fragments of chromosomes contained in the recombinant protoplasts;

(c) fusing the recombinant protoplasts of (b) with protoplasts of a second plant species to produce fused protoplasts, wherein the first and second plant species may be the same or different; and

(d) identifying fused protoplasts of (c) or plant cells derived therefrom that contain chromosome fragments that contain the exogenous nucleic acid and that exhibit normal plant chromosomal activities.

39. (previously presented) The method of claim 38, wherein the exogenous nucleic acid further comprises at least one yeast chromosomal element.

40. (previously presented) The method of claim 39, wherein the yeast chromosomal element comprises a first centromeric sequence functional in a yeast cell.

41. (previously presented) The method of claim 40, wherein the chromosome fragments comprise a second centromeric sequence functional in a plant cell.

42. - 44. (cancelled)